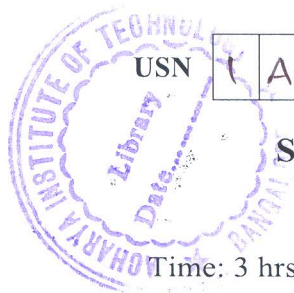


# CBCS SCHEME



USN

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17ME72

Seventh Semester B.E. Degree Examination, Jan./Feb.2021

## Fluid Power Systems

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

1. a. What are the various applications of fluid power systems? (05 Marks)
- b. State Pascal's law and mention the various advantages of fluid power systems. (05 Marks)
- c. Explain the various components used in hydraulic systems and its symbol. (10 Marks)

OR

2. a. Describe the various functions of hydraulic fluids and its types. (05 Marks)
- b. Define the fluid properties such as viscosity, viscosity index, pour point, fire point, flash point. (05 Marks)
- c. Explain the working of return line and suction line filtering with the aid of sketches. (10 Marks)

### Module-2

3. a. What are the various types of positive displacement pump used in fluid power system? (05 Marks)
- b. Explain with a sketch the construction and working of bladder type accumulator used in fluid power system. (05 Marks)
- c. Explain the construction and working of external gear pump with a neat sketch. (10 Marks)

OR

4. a. Explain the construction and working of double acting cylinder with a neat sketch. (05 Marks)
- b. An 8 cm diameter hydraulic cylinder has a 4 cm diameter rod. If the cylinder receives flow at 100 LPM and 12 MPa. Find the
  - (i) Extension and retraction speeds.
  - (ii) Extension and retraction load carrying. (05 Marks)
- c. Explain the construction and working of a hydraulic cylinder cushioning with a neat sketch. Also draw symbol. (10 Marks)

### Module-3

5. a. List various types of control valves. (03 Marks)
- b. With a neat sketch explain the working of pressure relief valve. (07 Marks)
- c. Explain the hydraulic regenerative circuit with a neat sketch. (10 Marks)

OR

6. a. With a neat sketch, explain the working of ball type check valve. (05 Marks)
- b. With a neat sketch, explain the working of the 4/2 manually operated direction control valve. (05 Marks)
- c. Explain the hydraulic cylinder sequencing circuits with a neat sketch. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

**Module-4**

- 7 a. Describe the various components used in pneumatic power systems and its symbol. (05 Marks)  
b. Explain the working of a single acting type of pneumatic cylinder with a neat sketch. (05 Marks)  
c. Explain the construction and working of lubricator used in pneumatic system with a neat sketch. (10 Marks)

**OR**

- 8 a. Explain the working of a shuttle valve used in pneumatic system with a neat sketch. (05 Marks)  
b. What are the various ways the pneumatic cylinders are mounted? (05 Marks)  
c. Explain the working of solenoid operated valve with a neat sketch. (10 Marks)

**Module-5**

- 9 a. Explain the speed control pneumatic circuits with a suitable sketch. (10 Marks)  
b. Explain the OR function of controlling the single acting pneumatic cylinder with a neat circuit. (10 Marks)

**OR**

- 10 a. Explain the controlling of pneumatic cylinders in a sequence as  $A^+ B^+ B^- A^-$  by cascading method. (10 Marks)  
b. Explain electro pneumatic control of double acting cylinder with a suitable circuit. (10 Marks)

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